

TABLE 1-continued

Medical Record of cancer patients.						
PATIENT	CANCER	GENDER/AGE	RACE	UICC STAGE	GLEASONS SCORE	OTHERS
B07	Breast	Female/54	Caucasian	T2N2M0		hypertension, obesity
B08	Breast	Female/55	Caucasian	T2NxM0		1-5 cigs/day, wine 200 mL/day
B09	Breast	Female/83	Caucasian	T4N0M0		Coronary artery disease, cerebral atherosclerosis
B10	Breast	Female/63	Hispanic	T3N2MX		6-10 cigs/day, hyperthyroid, hypertension, osteoarthritis
B11	Breast	Female/63	Caucasian	T1NXM0		arterial hypertension
P01	Prostate	Male/51	Caucasian	T2cNXM0	4 + 3 = 7	
P02	Prostate	Male/64	Caucasian	T3bN0MX	3 + 4 = 7	
P03	Prostate	Male/47	Caucasian	T2cN0M0	3 + 3 = 6	hypertension
P04	Prostate	Male/55	Caucasian	T2bN0M0	3 + 3 = 6	11-20 cigs/day
P05	Prostate	Male/73	Caucasian	T3aNXXMX	4 + 4 = 8	hypertension, 11-20 cigs/day
P06	Prostate	Male/64	Caucasian	T3N0M0		chronic bronchitis, 11-20 cigs/day
P07	Prostate	Male/60	Caucasian	T3aN0M0	3 + 4 = 7	gastroesophageal reflux
P08	Prostate	Male/72	African Am.	T2aNXXMX	3 + 3 = 6	1-5 cigs/day
P09	Prostate	Male/78	Caucasian	T3aN1MX	4 + 3 = 7	hypertension, atrial fibrillation
P10	Prostate	Male/66	Caucasian	T2aN0MX	3 + 3 = 6	hypertension, 11-20 cigs/day
P11	Prostate	Male/47	Caucasian	T2cN0M0	3 + 3 = 6	hypertension
S01	Unknown					
S02	Unknown					

[0221] Many proteins were successfully detected with high signal-to-noise, and the barcode signatures are distinctive among patients. Most assays show a relatively low fluorescence background. However, the assays on P05, P04, P10 and B10 were characterized by a high, interfering background. These high background assays all correlate with patients that were heavy smokers (~11-20 cigs/day); only one serum sample from a heavy smoker did not exhibit a high background (P06). The reason for this high background fluorescence remains unclear. A possible cause is the elevated blood content of the fluorescent carboxyhemoglobin formed in lung. While this identification of smokers constitutes unexpected information from the IBBCs, it also means that, for these patients, some pre-purification of the plasma or serum will be required in order to assay serum protein levels.

[0222] The protein panels used in the cancer-patient serum experiment (panel 1) and finger-prick blood test (panel 2), the corresponding DNA codes, and their sequences are summarized in Tables 2 and 3. These DNA oligomers were synthesized by Integrated DNA Technologies (IDT), and purified by high pressure liquid chromatography (HPLC). The quality was confirmed by mass spectrometry.

TABLE 2

List of protein panels and corresponding DNA codes.		
DNA-code	Human Plasma Protein	Abbreviation
Panel (1)		
A/A'	Interferon-gamma	IFN- γ
B/B'	Tumor necrosis factor-alpha	TNF- α

TABLE 2-continued

List of protein panels and corresponding DNA codes.		
DNA-code	Human Plasma Protein	Abbreviation
C/C'	Interleukin-2	IL-2
D/D'	Interleukin-1 alpha	IL-1 α
E/E'	Interleukin-1beta	IL-1 β
F/F'	Transforming growth factor beta	TGF- β
G/G'	Prostate specific antigen (total)	PSA
H/H'	Interleukin-6	IL-6
I/I'	Interleukin-10	IL-10
J/J'	Interleukin-12	IL-12
K/K'	Granulocyte-macrophage colony stimulating factor	GM-CSF
L/L'	Monocyte chemoattractant protein-1	MCP-1
M/M'	Blank control/reference	
Panel (2)		
AA/AA'	Interleukin-1 beta	IL-1 β
BB/BB'	Interleukin-6	IL-6
CC/CC'	Interleukin-10	IL-10
DD/DD'	Tumor necrosis factor-alpha	TNF- α
EE/EE'	Complement Component 3	C3
FF/FF'	C-reactive protein	CRP
GG/GG'	Plasminogen	Plasminogen
HH/HH'	Prostate specific antigen (total)	PSA

TABLE 3

List of DNA sequences used for spatial encoding of antibodies				
Sequence Name	Sequence)	SEQ ID NO	Tm (50 mM NaCl)	° C.
A	5' -AAA AAA AAA AAT CCT GGA GCT AAG TCC GTA-3'	1	57.9	
A'	5' NH3- AAA AAA AAA ATA CGG ACT TAG CTC CAG GAT-3'	2	57.2	